

MEDIA

and

SOLUTIONS

IDEAS FOR EXPERIMENT

UNIVERSITY NOTE BOOK

name P. Sedagji

subject Tel. Institute of Fund Res.
Bombay 5.



S-1810-N-80 Lvs.
U.S.A.

29/11/79.

① *Isolali* K-channel mutants resistant or sensitive to 4-aminopyridine by feeding adult flies.

0.5 mM AP has no effect

1.5 mM " causes leg shaking under ether

5 mM " causes vigorous leg shaking but flies die

(Jan, Jan + Dennis)
Proc. R. Soc. 198, 87.

TEA seems to act only by diffusing into the cut ends of axons.

② Endotoxin

Rat diaphragm :-

Effect on spontaneous μ a.p.s.

Effect on EP and evoked

EP - quantal content etc.

Effect - on Ac. Choline contractive response.

(Seems to have a presynaptic effect)

Experiments concluded.

01. 18/2/80

③ T. S. period of chemosensitivity
mutants —

Examine sensitivity of larval
response and adult response

④ Screening for new olfactory mutants :-

Adult selection :-

Larval selection :-

1. Fractionation using two different cues :-

i.e. Acetate Vs Alcohol

2. Screening for electrophysiological defects :-

1. Autogram

2. Single units

specifically for 2nd and 3rd chromosome lines.

use Sattler's method for 2nd and 3rd chromosome

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✓ Screening for gust mutants :-

- Try sugar wells.

Screening works well.

Both salt and sugar mutant isolated - (Bt Chia and Fwati)

Screening method for Na- negative (gust-E like mutants) remains to be developed.

(1988 - 1989)

⑥ Conditional behavioral mutants

a) γ -ray. olfactory

b) γ ray. Phototaxis

Experiment not very successful
Growth at high temps affects

1) Chemosensory response

2) Phototaxis

⑦

Mosaic analysis of off and just mutants.

1) Swati - analyzing just E
(1989)

⑧

Mapping of existing
chemotaxis mutants

⑨

Olfactory physiology

EAG

Single unit responses

Intermediate stations

15/10/88 Direction sensitivity of the antenna

- EAG
- Behaviour

⑩

Gastrointestinal Physiology:

⑪

High-level responses

Intermediate stations

11

Neuromuscular physiology

Larval

Adult flight muscles

Adult abdominal muscles

12

Axonal conduction

13

normal

adult

(13)

Wasp + Spider poisons

(For Wasp Poisons)

Dr. C. S. Lahiri MBBS. M. D.

Professor of Pharmacology,

School of Tropical Medicine

Calcutta - 700012

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Glutamate analogues

animal studies + molecular
(\rightarrow in vivo - vivo - test)

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SDH analysis:-

1. mutations blocked in electrophysiological responses

Salts :-

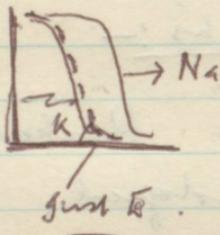
anions :-

2. Select SDH clones for antenna.

1990 Projects

1. Salt reception

1. Selection & Attraction blocked
(Select - over-sensitivity to Na).



2. Pyramus blocked: ?

1990

Projects - Continued -

1. Na^+ -blocked mutants :-

Select in just R background

They are not attracted by Na^+
(After X-ray or R-constuctors
disruption) (See a screening
protocol)

Separate Li^+ spike blocked
strains -

just R revertants :-

(Can be screened for just E
directly)

2. Select K^+ blocked (Repulsion - block)
Mutants .

3. just E alleles :- (See later)

Selected by excision :- R-increased

3. Genetics of ol^{C}

1. Excision from neighbouring insertions

2. Duplications in singed :-
(Champa & Bourns)

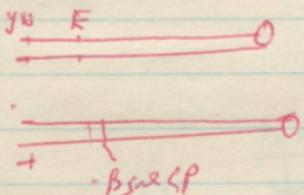
3. ol^{C} - mutants . (using strong double mutant $(\text{ol}^{\text{C}} \times \text{la})$).

- Trap method
- Multiple - γ - rays

4. Produce ol^{C} .

4. Moscic analysis of just E being
using (β -gal marker) as cell marker-

i) by mutagen crossing-over



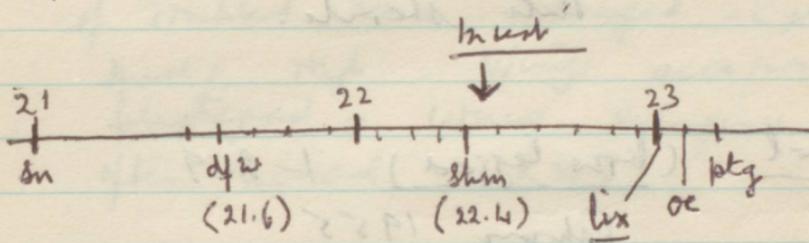
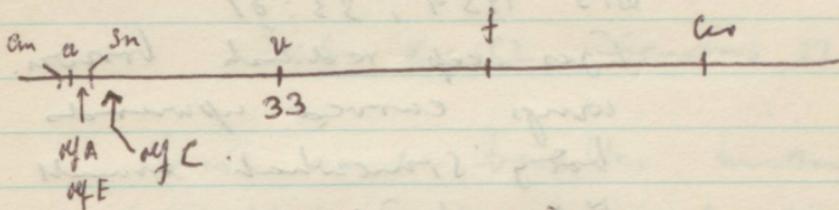
γ -ray -

Select yellow-hair batches on proboscis

Test - Physiolog.

β -gal staining pattern.

factory penches : (Genes) near $\frac{d}{Bn}$ (21-23)



Sn : 7 D1 - (21).

dfw : wing upheld & spread - ♀ sterile
(21.6)

shm : short macro (bristles short)
♂ sterile (22.4)

fix : split thorax (22.6).

fix : - little vitellogenesis.

rd6 (reddish brown) 1-21-7

Fahmy 1956 (RK 3)

DIS 1959, 33:89

Eyes deep reddish brown.
wings curved upwards
body somewhat small
Male sterile.

bwl (brow-legged) 1-21-7

Fahmy 1955 (RK 3)

DIS 33:83

Poorly variable short divergent
wing - legs shortened
and bow-shaped -
Male sterile - RK 3.

scr : (scruff). 1-22.0

Neal 1942

DRS 16:52, Genetics 27:532

Hairs and bristles missing
of doublet and deranged - Eyes
double & rough - Wings occasionally
blistered - wing margins
often missed (RK3)

gut E :- genes near gut E

(18-19)

6E 1-8- ($\frac{\text{Reg}}{\text{L}} \frac{\text{S}}{\text{F}}$)

shifted 1-17.9

Vein L3 shifted

RK2 - ♀ sterile

* depressed 1:18

Wing turns
down, RK2

* Eye (eyebuf) 1:18 One or both
eyes reduced
(slight to)
absent
often antenna
duplicated
(incomplete)
penetrance

* Int (tent) 1:18

Wings drop
brushes thin,
fly small
♂ - sterile

cm (caminae) 1-18.9

just BCD

(10 E₁₋₂)

for just BC

(10 E₁₋₂)

value of last

digit is 1000

most part

81.1 ~~break~~

but not first (value is 100 +
value of 1000)

(10 E₁₋₂)

value

another value

value

(10 E₁₋₂)

value

81.1 (10 E₁₋₂)

but not first

value

value

value

value

value

value

value

value

Experiment : Screening of
Na⁺ blocked mutations
on X chromosome

Streams required

1. $\hat{X}X$ ghost Rⁿ / ghost R²

2. P-mutant lines (mag⁺) on
the X chromosome.

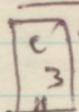
Cross :

♂♂ ~~+~~ $\hat{X}X$, ♀^{ghost} / ghost R

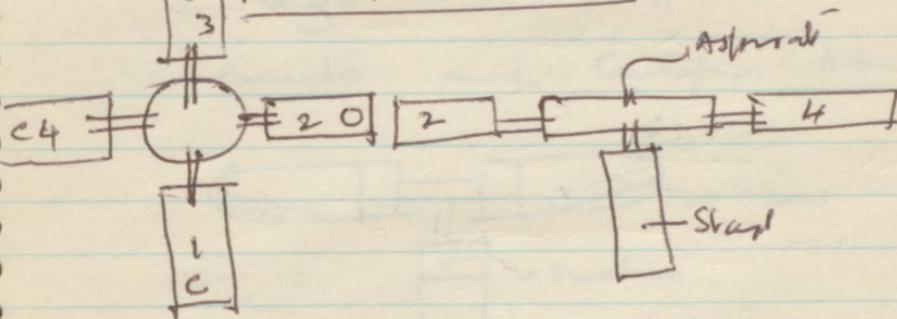
Test in groups of 10
on ~~test~~^{White} + Wall.

Mutant allele choice

may for enrichment



ref mutants



Start with 200 flies

Substrate odors from collects 150 flies. (at suitable attractant odors)

Let starting frequency be x .

There will be $\frac{x}{4}$ mutants in

O. and $\frac{3x}{4}$ in C odors

Enrichment = $\frac{(x/4) / 150}{(3x/4) / 150}$

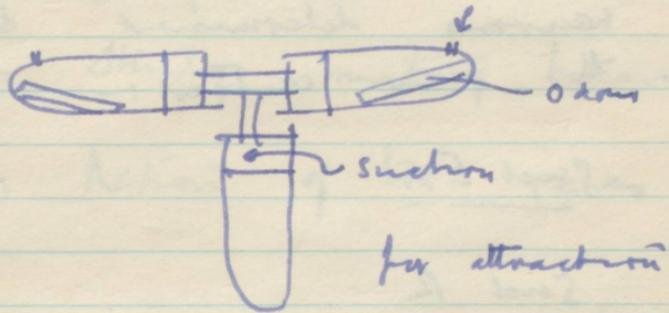
$$\frac{3x}{4} / 150 \div \frac{x}{4} / 200$$

$$= 3 \text{ fold / cycle}$$

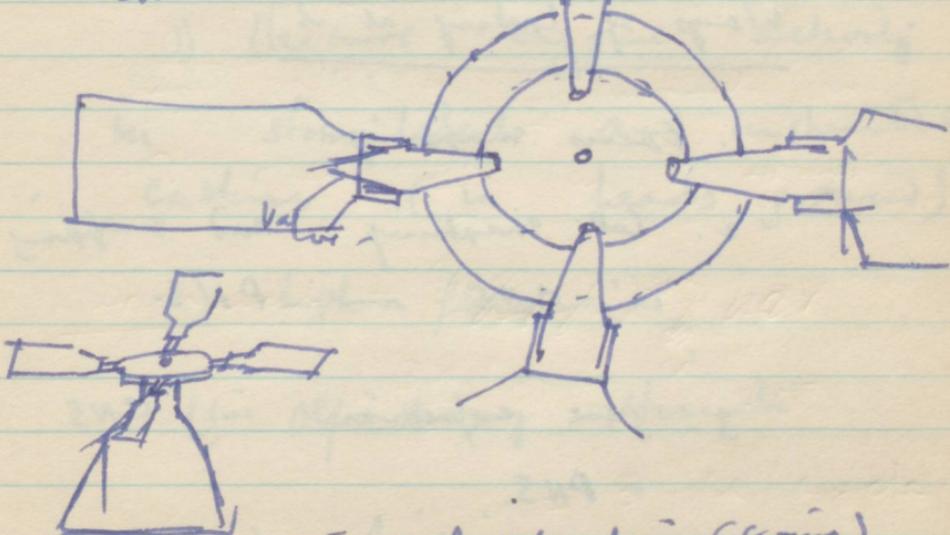
1991

Make Improved maze

T maze with polypropylene
connectors and Centrifuge tubes.



Make with polypropylene tubing
connectors & bottles



For classification (Scoring)
and selective screening.

1991

Gustatory mutants

of the identity of gustatory neurons determined by the brain centres :-

Gust E

Gust R

and other isolates with increased or reduced firing.

Ways of looking at it

1. Focuss mapping

2. Cell mapping and mapping in CNS and PNS.

3. gene expression in CNS + PNS.

P: *musca*

Sex-specific traits

- 1). Study mating behaviors
- 2) Action of tra genes.

Activity-dependent expression
of neural genes

- 1) Measure enzyme activity in stimulated and unstimulated cultures (in heads ground)
 - a) light flashes
 - b) olfactory stimuli
- 3) Rich and poor media for growth

Mutations affecting olfactory receptor

Examine attraction and
repulsion of lg- in mazes

lg- grows late :- Can
one use this to search for
late growing neuronal mutants?

EAG

Examining development of
EAG after emergence
(also taste training).

Do all chemical environments
develop in parallel?

What happens in different
environments?

Rich Ve - synthetic media

Media with different atoms

1995

off c (β - integrin)

1. To test if integrin affects offaction :-

Select mutants which are strong dominant-negative suppressors of EA response

Note :- Dimerization will be affected in homodimers but heterodimeric integrins may survive

Experiment :

Test - Lethal excision lines + EA⁻ excision lines again off c 14 and off c 17

(Think of other screens with Champ's P- insert)

2) ts -mys mutants ($ts3$ is a
tight allele)

Examine if high temperature affects the olfactory responses of flies grown at permissive temperature.

1. EAG

2. Olfactory behaviour

6) Rana,

I.I.T. Delhi

1988

1. Girish R. Gupta - IIT. Phys-Engineering
(wants to work in summer vacation).
2. Arshad Kudroli : IIT. Engineering-
Physics - Worked for 4 weeks
with Swati.
3. Shabani Basak
Inst of Sci. Bombay
(will work during summer)
end of May
4. Dr. Sayed Husain
Nawana Azad Medical College
(will come in June for)
two months
5. Jyoti Rengarajan : (COBRA)
Jyoti Rengarajan
1st week of May

Students at A.I.T.S.
(Not at J.N.U. Meeting).

1. Sujit Kumar Sikdar
Dept of Physiology
AITS.

2. Brahm Faladar
Dept of Biochemistry
AITS.

3. Mohre Hamid Bawali
Dept of Biochemistry
AITS.

1988-

Vikram Dwarkadas :
(Did not come).

Other addresses:

1. Syed Mohammed Fazli
82. Ibrahimtola Road,
Bombay 3.
Tel. 335682.

(came in connection with)
his 80th Centenary exhibition

2.

Mrs. Rita Dag,
Cancer Res. Institute
(Post Doc. Fellowship)
?

PK Malkani
Camera Service Center
Opp. Strand Cinema
Colaba.
Tel. 215603

Students (Prospective) -
(and) Candidates

Satyajit Rath
Anuradha Swami
Vanita Bal.

(Medical students from)
Poona - B. J. Med.
College.

M. K. Jayakar

90 Dr. K. S. Jayakar
27, M. Karve Rd.
Bombay 4.

Mrs. Alka Mehta

Tel. 216945 → Sanil Bhatia
Sister in Law.

Dr. Subroto Tripathi

(Painter's son in Law).

Physiology Dept.

Patal Chest. Res. Inst.

(Nivedita). Nā

Dr - N. K. Shah ,

Phone . Hark . 355751

Home 386583 .

For Amherst

New Job

1. Direction Desires :

2. Electrode Location .

Old Jobs

Ambassador

1. Carlo :
1 year.

2. Rockers :
3 years (1976)

3. Electronics Pictures
1 year. (since 1978)

